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CENTRAL FLOW CONTROL OPERATIONAL SUPPORT SYSTEM USER'S MANUAL, --ETC(U)
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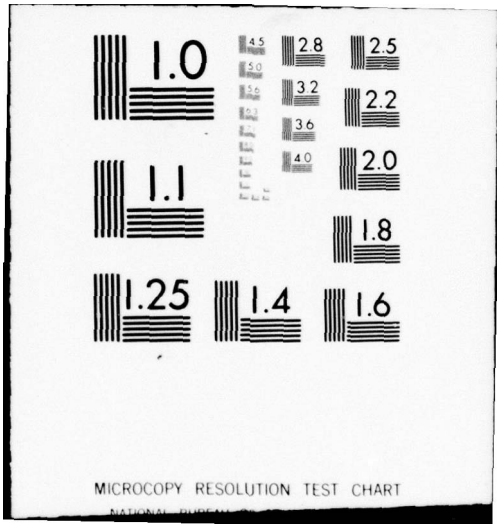
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MICROCOPY RESOLUTION TEST CHART

Report No. FAA-RD-79-41

LEVEL II

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CENTRAL FLOW CONTROL OPERATIONAL SUPPORT SYSTEM USER'S MANUAL TIMING ANALYSIS REPORT PROGRAM (TARP)

January 1979

Final Report

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16. Abstract

This document describes the functions of the Timing Analysis Report Program (TARP) and details the procedures required to exercise them. This document is an update to NASP-9227-10 for the Central Flow Control (CFC) facility. Modifications to the TARP program were made for compatibility with OS/MVT.

TARP reduces System Analysis Recording (SAR) data and produces timing and summary information reports regarding system use. Multiple SAR inputs, time intervals, subprogram requests, and phase combinations are accommodated.

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METRIC CONVERSION FACTORS

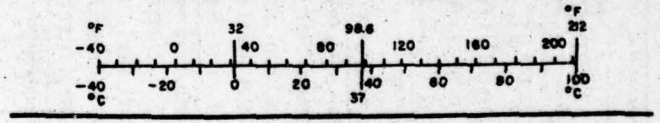
Approximate Conversions to Metric Measures

Symbol	When You Know	Multiply by	To Find	Symbol
		LENGTH		
in	inches	*2.5	centimeters	cm
ft	feet	30	centimeters	cm
yd	yards	0.9	meters	m
mi	miles	1.6	kilometers	km
		AREA		
in^2	square inches	6.5	square centimeters	cm^2
ft^2	square feet	0.09	square meters	m^2
yd^2	square yards	0.8	square meters	m^2
mi^2	square miles	2.6	square kilometers	km^2
	acres	0.4	hectares	ha
		MASS (weight)		
oz	ounces	28	grams	g
lb	pounds	0.45	kilograms	kg
	short tons (2000 lb)	0.9	tonnes	t
		VOLUME		
tsp	teaspoons	5	milliliters	ml
Tbsp	tablespoons	15	milliliters	ml
fl oz	fluid ounces	30	milliliters	ml
c	cups	0.24	liters	l
pt	pints	0.47	liters	l
qt	quarts	0.95	liters	l
gal	gallons	3.8	liters	l
ft^3	cubic feet	0.03	cubic meters	m^3
yd^3	cubic yards	0.76	cubic meters	m^3
		TEMPERATURE (exact)		
°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C

*1 in = 2.54 (exactly). For other exact conversions and more detailed tables, see NBS Misc. Publ. 286, Units of Weights and Measures, Price $2.25, SD Catalog No. C13.10:286.

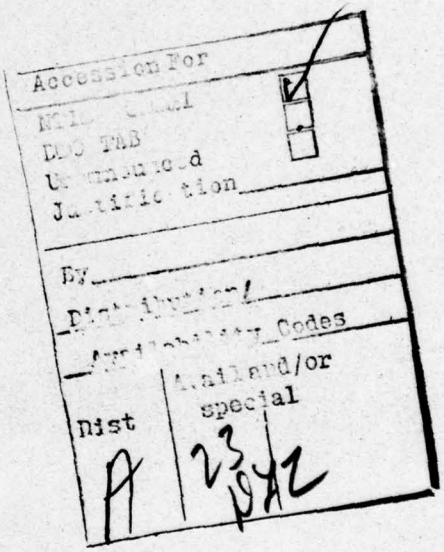
Approximate Conversions from Metric Measures

Symbol	When You Know	Multiply by	To Find	Symbol
		LENGTH		
mm	millimeters	0.04	inches	in
cm	centimeters	0.4	inches	in
m	meters	3.3	feet	ft
m	meters	1.1	yards	yd
km	kilometers	0.6	miles	mi
		AREA		
cm^2	square centimeters	0.16	square inches	in^2
m^2	square meters	1.2	square yards	yd^2
km^2	square kilometers	0.4	square miles	mi^2
ha	hectares (10,000 m^2)	2.5	acres	
		MASS (weight)		
g	grams	0.035	ounces	oz
kg	kilograms	2.2	pounds	lb
t	tonnes (1000 kg)	1.1	short tons	
		VOLUME		
ml	milliliters	0.03	fluid ounces	fl oz
l	liters	2.1	pints	pt
l	liters	1.06	quarts	qt
l	liters	0.26	gallons	gal
m^3	cubic meters	35	cubic feet	ft^3
m^3	cubic meters	1.3	cubic yards	yd^3
		TEMPERATURE (exact)		
°C	Celsius temperature	9/5 (then add 32)	Fahrenheit temperature	°F



PREFACE

This is an update to NASP-9227-10 for the Central Flow Control (CFC) Facility. Modifications to the TARP Program were made to provide compatibility for executing TARP on the 9020A System under OS/MVT.



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ABBREVIATIONS

CFC	Central Flow Control
I/O	Input/Output
L&A	Legal and Analysis
NAS	National Airspace System
NOSS	NAS Operational Support System
SAR	System Analysis Report
SE	Storage Element
TAR	Timing Analysis Report
TARP	Timing Analysis Report Program

SECTION 1 - INTRODUCTION

1.1 Purpose and Scope

The purpose of the Timing Analysis Report Program (TARP) User's Manual is to explain what services are provided to CFC development programmers by the TARP and to explain the required procedures needed to use the program. This document will be updated as the program's services and operating procedures change.

1.2 Background Information

This program was developed to assist test programs in reducing and analyzing test data during CFC Monitor system testing. It was developed to execute in the NOSS environment and was modified to permit its operation under OS/9020.

1.3 References

The following document may help the programmer use this manual

Timing Analysis Report Program (TARP) Subprogram Design Document (SDD), NASP-9127-latest revision, Contract FA65WA-1395, IBM Corporation, NAFEC, Atlantic City, New Jersey.

1.4 Document Summary

Section 2, Program Environment, specifies both the required and optional hardware configuration. The minimum and maximum number of elements and devices that may be configured are also specified.

Section 3, Program Operation, describes the services provided by this program. In addition to explaining how to use each service, this section describes any program restrictions that might affect the user.

Section 4, Input, explains the purpose, format, and content of each input message that is processed by TARP.

Section 5, Output, explains the purpose, format, and content of each output produced by TARP. Sample printouts are also included.

Section 6, Diagnostics, explains the cause, format, and meaning of each diagnostic message produced by TARP.

Section 7, Job Control Language, explains the JCL needed to execute TARP under OS/9020.

SECTION 2 - PROGRAM ENVIRONMENT

Figure 2-1 illustrates the minimum system configuration required to run TARP.

SE REQUIREMENT	2
.System	R OS
.AUXIL	R Scratch
.Work 2	R SAR Tape
System I/O	
.SYSIN	T or C
.SYSOUT	T or P
Minimum Tape Requirement	1
Maximum Tape Requirement	4

LEGEND: R - Required
T - Tape
C - Card
P - Printer

Figure 2-1. TARP System Environment

SECTION 3 - PROGRAM OPERATION

TARP reduces SAR tape records by selectively printing TAR timing information and providing summary information. Program TARP will output timing information for any CFC subprogram specified. The following capabilities exist:

a. Multiple SAR input tapes may be read

b. Multiple time intervals for reading the SAR tape for each CFC subprogram are possible

c. Multiple subprogram requests are possible

d. Multiple phase combinations are possible

e. Printer output is possible

TARP operates independently under OS/9020, but is dependent on the CFC Monitor subprograms that format and write the SAR tapes.

SECTION 4 - INPUT

4.1 General

TARP is divided into five phases. One phase is concerned with Program Element execution time and frequency of program activation. Another phase provides data on parallel program operation. A third phase provides an SVC/Subprogram cross-reference, while the fourth phase deals with TAR recordings which were purge processing TARs. The fifth phase deals with the generation of an HRT tape. Control and request cards are used to select which type of study should be made on which subprograms for some time interval.

4.1.1 Program Element Execution Time Study Phase (Phase 1)

Time study information includes activate, finish, active, execution, and suspend times along with meaningful time differentials. Requests for several subprograms can be issued.

When more than one subprogram is requested, the listings are not separated, i.e., they are output in time sequence. Summary information is listed at time intervals as specified by the summary parameter on the request card.

The frequency of subprogram activation is also analyzed for requested subprograms. The time between activation of the subprogram is accumulated with the minimum and maximum times. The number of times the subprogram is activated is also registered. At the end of the run, the average time between activations is calculated. If the user specifies an expected subprogram activation frequency on the request card, the

expected frequency and the actual frequency are compared and a percent error is calculated. If the user does not specify an expected subprogram frequency, the percent error is not calculated.

A list is then generated, listing the subprogram name, expected subprogram frequency (as specified by the user), actual frequency as calculated, percent error, and minimum and maximum times between activations.

4.1.2 Parallel Program Operation Study Phase (Phase 2)

This study provides information on a time basis for 22 subprograms, In time sequence, a listing is generated which shows the activity of each subprogram, such as suspended, activated, executing, or finished. A legend is also printed which explains the meaning of each of the activity codes. There is no limit to the number of time spans that may be selected per run, as long as they are in start time order and one request does not overlap another request.

4.1.3 SVC/Subprogram Summary Phase (Phase 4)

This study summarizes, for a particular time interval, the number of times each SVC was issued for each subprogram and the total number of times SVCs were issued. The summary also shows the total number of times each SVC was issued by all subprograms. At the end of the listing, the total TAR records read and the total TAR errors encountered during this run are shown. There is no limit to the number of requests that may be made per run, as long as the requests are in start time order and one request does not overlap another request.

4.1.4 Purge Processing History (Phase 8)

This study summarizes, for a particular time interval, the TAR recordings which were purge TARs. For the requested time interval, the user will receive a one-line printout for each purge TAR, indicating its time, the highest purge class invoked, the purge class breakdown, the number of 2K blocks requested to be purged and actually purged, and the number of modules purged. At the conclusion of each time interval, a purge summary is printed. This includes the total number of purges, the total number of 2K blocks purged, the minimum, maximum, and mean number of 2K blocks purged, and the average time interval between purges. For each purge class (1-8), the number of times a class is reached during a purge and the percentage of the total reached are also printed.

There is no limit to the number of requests that may be made per run, as long as the requests are in start time order and one request does not overlap another request. However, it should be noted that Phase 8 processing is a stand-alone function, i.e., it cannot be requested in the same run with Phase 1, 2, or 4 functions.

4.1.5 HRT Generation (Phase 9)

Phase 9 will produce a paeudo-HRT tape in a format acceptable to the reduction program, REDUC, to allow the generation of statistical reports on I/O interrupts, external interrupts, SVC interrupts, and encoded program element interrupts.

4.2 Card Input

Figure 4-1 illustrates a sample input deck for TARP.

4.2.1 Model Control Card Format

This card informs TARP which model produced the TAR records. If this card is not used, Model 3 is assumed. The model control card is not applicable to the CFC System and should not be provided.

Card Columns:	0	0
	1	7
	MODEL	a

where

a = 1 for model 1
    3 for model 3
    4 for E-type TARs

4.2.2 Phase Control Card Format

This card informs TARP what data requests are to be honored. A request for any phase except those indicated below is rejected. Phase 8 cannot be run in the same job with other phases.

Card Columns:	1	3	5
	a	b	cccc

where

a = 1 - PE Execution Time Study Phase (See Figure 4-1)
    2 - Parallel Program Operation Study Phase (See Figure 4-2)
    3 - Phase 1 and Phase 2 (See Figure 4-3)
    4 - SVC/Subprogram Summary Phase (See Figure 4-4)
    5 - Phase 1 and Phase 4 (See Figure 4-5)
    6 - Phase 2 and Phase 4 (See Figure 4-6)
    7 - Phase 1 and Phase 2 and Phase 4 (See Figure 4-7)
    8 - Phase 8 must be run alone. It cannot be run with any other phase
    9 - Phase 9 must be run alone. It cannot be run with any other phase

```
//SYSIN DD *
1 N 0300
SIMC 002900 013000 0015 0012
NIMC 002900 003000 0015 0030
GIMC 002900 003000 0015 0010
TITC 002900 003000 0015 0013
IMLC 002900 013000 0015 0012
OMLC 002900 003000 0015 0030
SOTC 002900 003000 0015 0010
STUP 002900 003000 0015 0013
ENDPH1
/*
```

Figure 4-1. Sample Input Deck - Phase 1

```
//SYSIN DD *
2 N 0300
PH2TIME 000000 000300 SIMC,NIMC,CIMC,TITC,IMLC,OMLC,TMLC,SOTC,CTY   ,CSS
PH2TIME 000310 000320 SIMC,NIMC,CIMC,TITC,IMLC,OMLC,TMLC,SOTC,CTY   ,CSS
ENDPH2
/*
```

Figure 4-2. Sample Input Deck - Phase 2

```
//SYSIN DD *
3 N 0300
SIMC 002900 013000 0015 0012
NIMC 002900 003000 0015 0030
TITC 002900 003000 0015 0030
CSD  002900 003000 0015 0030
ENDPH1
PH2TIME 000000 000300 SIMC,NIMC,CIMC,TITC,IMLC,OMLC,TMLC,SOTC,CTY  ,CSS
PH2TIME 000310 000320 SIMC,NIMC,CIMC,TITC,IMLC,OMLC,TMLC,SOTC,CYT  ,CSS
ENDPH3
/*
```

Figure 4-3. Sample Input Deck - Phases 1 and 2

```
//SYSIN DD *
4 N 0300
PH4TIME 000000 000300
PH4TIME 000310 000320
ENDPH4
/*
```

Figure 4-4. Sample Input Deck - Phase 4

```
//SYSIN DD *
5 N 0300
SIMC 003000 003100 0015 0006
TITC 003000 003100 0015 0006
SOTC 003000 003100 0015 0006
CSD  003000 003100 0015 0006
LISA 003000 003100 0015 0006
ENDPH1
PH4TIME 000000 000300
PH4TIME 000310 000320
ENDPH5
/*
```

Figure 4-5. Sample Input Deck - Phases 1 and 4

```
//SYSIN DD *
6 N 0300
PH2TIME 000000 002900 SIMC,TMLC,AQDC,CSD  ,CAPL,ARRD
PH4TIME 002900 003000
PH2TIME 003000 003100 SIMC,TMLC,AQDC,CSD  ,CAPL,ARRD
PH4TIME 003200 003300
ENDPH6
/*
```

Figure 4-6. Sample Input Deck - Phases 2 and 4

```
//SYSIN DD *
7 N 0300
SIMC 002900 013000 0015 0012
NIMC 002900 003000 0015 0030
TITC 002900 003000 0015 0030
CSD  002900 003000 0015 0030
ENDPH1
PH2TIME 000000 000300 SIMC,NIMC,CIMC,TITC,IMLC,OMLC,TMLC,SOTC,CTY ,CSS
PH2TIME 000310 000320 SIMC,NIMC,CIMC,TITC,IMLC,OMLC,TMLC,SOTC,CTY ,CSS
ENDPH3
PH4TIME 000330 000350
PH2TIME 000000 000360 SIMC,NIMC,CIMC,TITC,IMLC,OMLC,TMLC,SOTC,CTY, CSS
ENDPH7
/*
```

Figure 4-7. Sample Input Deck - Phases 1, 2, and 4

b = N - Compool not on File 2 of first SAR tape
    Y - Compool is on File 2 of first SAR tape

cccc = interval timer units/sec - 0300 is usual unless SETT has been used in CFC run

4.2.3 Phase 1 Request Card Format

This card is used to request activation and execution timing information for a specified period of time. (See Figure 4-1).

```
Card
Columns:                    1      2      2
            1      6        3      0      5

            aaa(a) cccccc dddddd eeee   ffff
```

where

aaa(a) = subprogram name (4 characters)
cccccc = record select start time (HHMMSS)
dddddd = record select stop time (HHMMSS)
eeee = summary parameter (MMSS) denotes frequency of summary data output
ffff = subprogram activation frequency (in half-seconds)

4.2.4 Phase 1 End Card Format

This card is used to indicate the end of the Phase 1 request cards. (See Figure 4-1).

```
Card
Columns:    0

            1

            ENDPH1
```

4.2.5 Phase 2 Request Card Format

This card is used to request SVC and execution information for programs running in parallel for a specified time period. (See Figure 4-2).

```
Field Card
Card
Columns:                    1      2              7
            1        9      6      5              2

            PH2TIME  aaaaaa bbbbbb dddd,dddd,...,dddd
```

```
Second Card
Card
Columns:                    1                    7
                1           4                    2

                            dddd,dddd,dddd,....  dddd
```

where

aaaaaa = record select start time
bbbbbb = record select stop time

dddd,
dddd,... =
List of four character names of subprograms requested, running onto second card if necessary. Note that if a continuation card is used and completely filled with 4-character subprogram names through CC 72, exactly 22 subprograms can be requested (including those on a fully-used first card). This is the maximum number of subprograms which can be reported on a Phase 2 output listing (see Figure 5-2).

4.2.6 Phase 2 End Card Format

This card is used to indicate the end of the Phase 2 requests (See Figure 4-2).

```
Card
Columns:    0

            1

            ENDPH2
```

4.2.7 Phase 4 Request Card Format

This card is used to request a summary of SVC calls by subprogram for a specified period of time (See Figure 4-4).

```
Card
Columns:                        1
            1       9           6

            PH4TIME aaaaaa      bbbbbb
```

where

aaaaaa = record select start time
bbbbbb = record select stop time

4.2.8 Phase 4 End Card Format

This card is used to indicate the end of Phase 4 request cards (See Figure 4-4).

Card Columns:	0
	1
	ENDPH4

4.2.9 Phase 8 Request Card Format

This card is used to request a one-line printout for each purge TAR in the requested time interval. It must follow the phase control card (See Figure 4-8).

Card Columns:			1
	1	9	6
	PH8TIME	aaaaaa	bbbbbb

where

aaaaaa = record select start time
bbbbbb = record select stop time

4.2.10 Phase 8 End Card Format

This card is used to indicate the end of the phase 8 request cards. It must be the final card in the input deck.

4.2.11 Phase 9 Request Card Format

This card is used to request an HRT tape to be generated (See Figure 4-9).

```
//SYSIN DD *
8 N 0300
PH8TIME 234900 235959
ENDPH8
```

Figure 4-8. Sample Input Deck - Phase 8

Card Columns:	1	9	16
	PH9TIME	aaaaaa	bbbbbb

where

aaaaaa = record select start time
bbbbbb = record select stop time

4.2.12 Phase 9 End Card Format

This card is used to indicate the end of the phase 9 request (See Figure 4-9).

4.3 Tape Input

The tape input to this program is a Model 3 SAR tape. The input tape is a tape that may be reduced, under card control, to generate the output listings.

```
//SYSIN DD *
9 N 0300
PH9TIME 230000 240000
ENDPH9
```

Figure 4-9. Sample Input Deck - Phase 9

SECTION 5 - OUTPUT

TARP outputs consist of printer output.

5.1 Tape and Environment Diagnostics

The tape and environment diagnostic messages indicate an error in available hardware, in tape mounting, or in the tapes themselves.

Refer to Section 6, Diagnostics, for actual message formats and their meanings.

5.2 Card Diagnostics

The card diagnostic messages are printed with the card in error. Refer to Section 6, Diagnostics, for actual messages and their meanings.

5.3 Phase 1 Output

Figure 5-1 is a sample of Phase 1 output. The meanings of the column headings are as follows:

PEID - Program Element Identification

ACTIVA TIME - Time PGM was activated

DELACT TIME - Time between this activate and the next activate

FINIS TIME - Time PGM finished

ACT TIME - Total time PGM was active

EX TIME - Time spent in execution

SUS TIME - Time spent in suspension

ET+ST - Total execution and suspend time

DAT - Difference between time active and total execution and suspend time

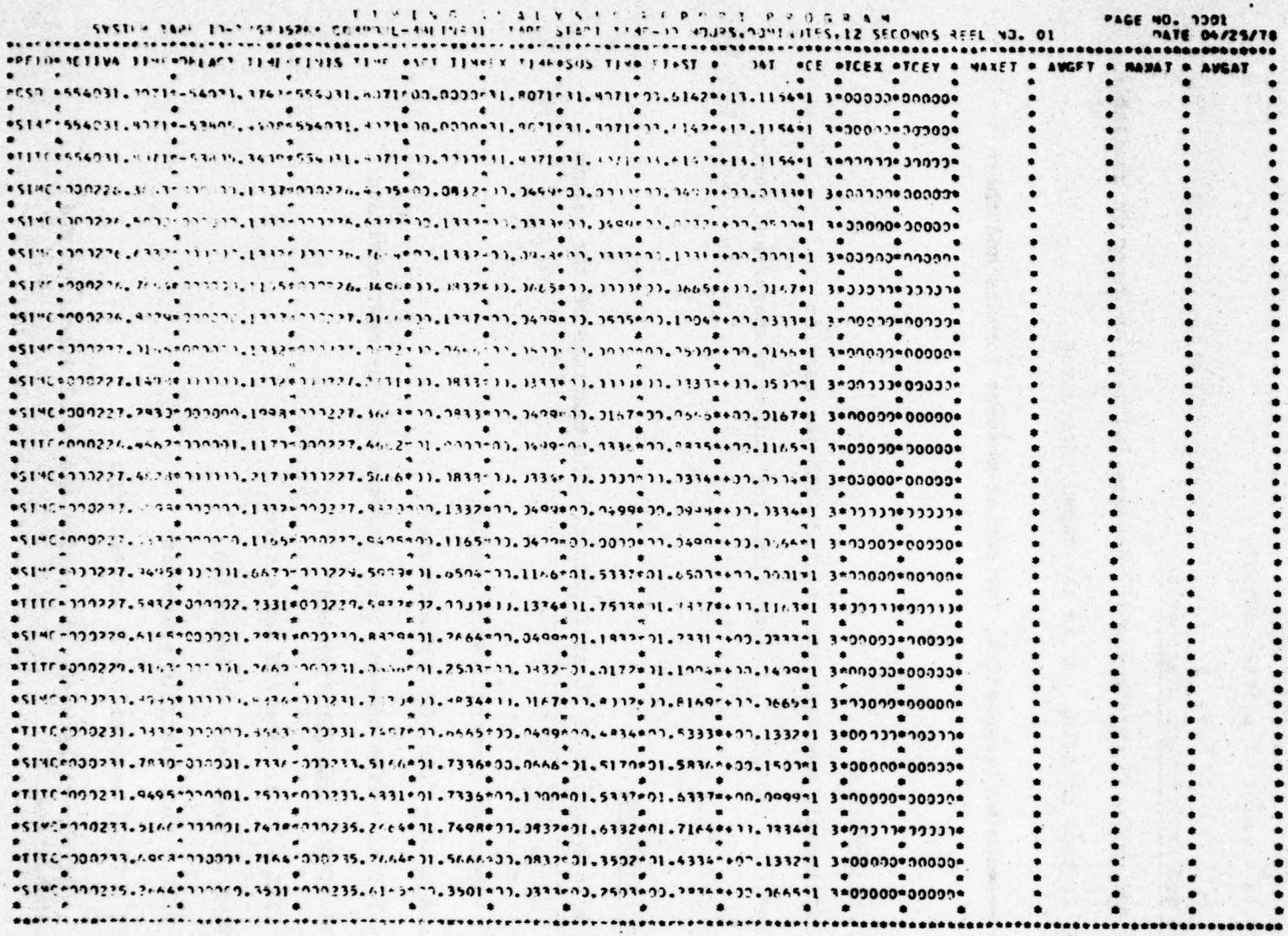
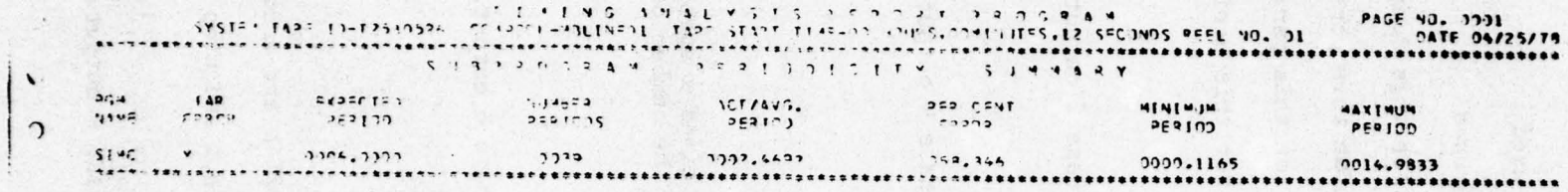


Figure 5-1. Phase 1 Output (1 of 2)



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SUBPROGRAM PERIODICITY SUMMARY

SEG NAME	TAB CODE	EXPECTED PERIOD	NUMBER PERIODS	VCT/AVG. PERIOD	PER CENT ERROR	MINIMUM PERIOD	MAXIMUM PERIOD
SEGC	Y	0004.0000	0039	0002.6692	058.346	0000.1165	0014.9833

Figure 5-1. Phase 1 Output (2 of 2)

CE - Which CES/PGM used for execution

TCEX - TARE count for first CE used

TCEY - TARE count for second CE used

MAXET - Maximum execution time for this summary period

AVGET - Average execution time for this period

MAXAT - Maximum activated time for this period

AVGAT - Average activated time for this period

5.4 Phase 2 Output

Figure 5-2 illustrates a sample of Phase 2 output.

5.5 Phase 4 Output

Figure 5-3 illustrates a sample of Phase 4 output. The field meanings are as follows:

SVC - SVC name

ID - SVC number

aaaaaa/bbbbbb - total number of times a specific SVC was issued for a particular program over the number of times that SVC was not honored

5.6 Phase 8 Output

Figure 5-4 illustrates a sample of Phase 8 output.

5.7 Phase 9 Output

1. HRT tape
2. TARE count summary report, if TARE's are encountered. This report will also indicate the start and stop time of the HRT tape.

Figure 5-5 illustrates a sample of Phase 9 output.

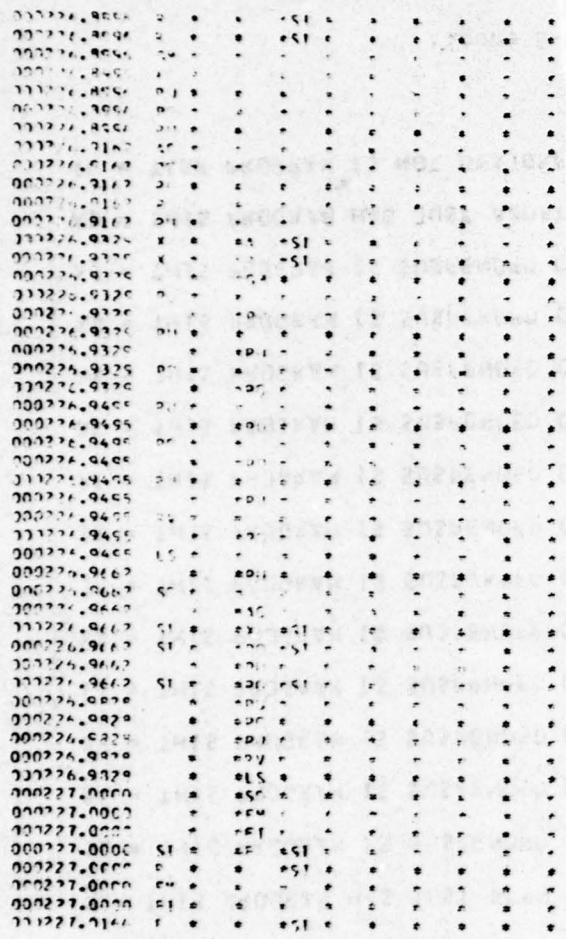

Figure 5-2. Phase 2 Output (1 of 3)

```
                    P A R A L L E L   P R O G R A M   O P E R A T I O N

THE LEGEND FOR THIS PROGRAM IS AS FOLLOWS
A = THIS PROGRAM HAS JUST BEEN ACTIVATED.
X = THIS PROGRAM IS IN EXECUTION.
F = THIS PROGRAM HAS JUST DONE A FINIS.
R = THIS PROGRAM HAS JUST BEEN RESUMED.
SL = THIS PROGRAM IS SUSPENDED ON A LOCK.
SR = THIS PROGRAM IS SUSPENDED ON A RESERVE.
XP = THIS PROGRAM IS SUSPENDED ON A LEASE(POOL).
SI = THIS PROGRAM IS SUSPENDED ON AN I/O INTERRUPT.
XI = THIS PROGRAM IS SUSPENDED ON AN EXTERNAL INTERRUPT.
SA = THIS PROGRAM IS SUSPENDED ON A RECORD.
SW = THIS PROGRAM IS SUSPENDED ON A WAITIO.
PI = THIS PROGRAM IS SUSPENDED ON A PROGRAM INTERRUPT
XR = THIS PROGRAM IS SUSPENDED ON A READ.
XX = THIS PROGRAM IS SUSPENDED ON AN EXCP.
XW = THIS PROGRAM IS SUSPENDED ON A WRITE.
AS = THIS PROGRAM IS SUSPENDED ON A SEND.
AB = THIS PROGRAM HAS JUST ABORTED.
IL = TARP PROGRAM IS NOT DESIGNED TO HANDLE THIS TYPE SUSPEND.
```

Figure 5-2. Phase 2 Output (2 of 3)

```
THE LEGEND FOR SVC CODES IS AS FOLLOWS
   CODE        SVC
     AC        ACCEPT
     AS        ASGN
     BR        BRANCH
     CE        CEASE
     CN        CANCEL
     CO        CONFIG
     CT        CNTRL
     DE        DEMAND
     DL        DELETE
     EN        EXPR
     ET        ETIME
     EX        EXCP
     FE        FETCH
     FI        FINIS
     FM        FREMAIN
     FR        FREE
     GO        GDE
     GM        GETMAIN
     HC        HCLO
     IA        IASGN
     LA        LACRI
     LI        LINK
     LK        LOCK
     LS        LEASE
     MC        MCVC
     NO        NOFIC
     PF        PFETCH
     PT        POINT
     RC        RECORD
     RD        READ
     RE        RESUME
     RL        RELEASE
     RP        RECVP
     RV        RESERVE
     RY        RELAY
     SC        SCHEDL
     SD        SEND
     SE        SELECT
     SK        SKIP
     SP        SPCI
     SZ        SEIZE
     TO        TERMSO
     TS        TERMSV
     TU        TERMSU
     UK        UNLOCK
     WI        WAITIO
     WR        WRITE
     ZC        ZOCRE
     SB        SBA/XMM
     RT        RTIME
     RS        RSETE
     GO        GO
     TL        TSLOK
     TK        TSLLK
```

Figure 5-2. Phase 2 Output (3 of 3)

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[illegible] JR SVC SUMMARY TIME [illegible] - [illegible] PAGE NO. 0034

SVC ID PROGRAM ID

SVC ID		DEMD	USA	TEST	DLOY	FIXL	ARBI	FADE	PCR
BRANCH	31	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	000000/000000	000000/000000	000000/000000
FINIS	32	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	000000/000000	000000/000000	000042/000000
TERMSV	33	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	000135/000000	000000/000000	000001/000000
TERMSU	34	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	000000/000000	000000/000000	000000/000000
TERMSO	35	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	000000/000000	000000/000000	000000/000000
SCHEDL	36	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	000000/000000	000000/000000	000000/000000
[illegible]	37	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	000000/000000	000000/000000	000000/000000
CONFIG	38	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	000000/000000	000000/000000	000000/000000
RESERV	39	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	000011/000000	000000/000000	000312/000252
CANCEL	3A	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	000000/000000	000000/000000	000000/000000
LEASE	3B	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	000011/000000	000000/000000	000000/000000
RELEAS	3C	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	000000/000000	000000/000000	000000/000000
LOCK	3D	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	000000/000000	000000/000000	000000/000000
UNLOCK	3E	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	000000/000000	000000/000000	000000/000000
SEND	3F	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	000011/000000	000000/000000	000000/000000
ACCEPT	40	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	000004/000000	000000/000000	000000/000000
DELETE	41	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	000000/000000	000000/000000	000000/000000
RELAY	42	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	000000/000000	000000/000000	000040/000000
HOLD	43	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	000000/000000	000000/000000	000000/000000
POINT	44	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	000000/000000	000000/000000	000042/000000
SELECT	45	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	000000/000000	000000/000000	000041/000000
ASGN	46	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	000000/000000	000000/000000	000000/000000
CNTRL	47	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	000000/000000	000000/000000	000000/000000
EXCP	48	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	000036/000000	000000/000000	000001/000000
IASGN	49	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	000000/000000	000000/000000	000000/000000
LADRT	4A	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	000000/000000	000000/000000	000043/000000
NOPIR	4B	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	000000/000000	000000/000000	000000/000000
READ	4C	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	000000/000000	000000/000000	000000/000000
SKIP	4D	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	000000/000000	000000/000000	000000/000000
WAITIO	4E	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	000000/000000	000000/000000	000000/000000
WRITE	4F	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	000000/000000	000000/000000	000000/000000
SPCI	50	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	000000/000000	000000/000000	000000/000000
ETIME	51	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	000000/000000	000000/000000	000000/000000
RECRD	52	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	000000/000000	000000/000000	000000/000000
RECMR	53	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	000000/000000	000000/000000	000000/000000
DEMAND	54	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	000000/000000	000000/000000	000000/000000
SEIZE	55	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	000000/000000	000000/000000	000000/000000
FREE	56	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	000000/000000	000000/000000	000000/000000
SBA/XMM	57	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	000000/000000	000000/000000	000000/000000
RTIME	58	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	000000/000000	000000/000000	000002/000000
RSETE	59	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	000000/000000	000000/000000	000000/000000
STOW	5A	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	000000/000000	000000/000000	000000/000000
GO	5B	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	000000/000000	000000/000000	000000/000000
TSLOK	5C	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	000000/000000	000000/000000	000000/000000
TSULK	5D	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	000000/000000	000000/000000	000000/000000
MOVE	5E	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	000000/000000	000000/000000	000000/000000
EXMP	5F	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	000000/000000	000000/000000	000000/000000
FETCH	60	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	000000/000000	000000/000000	000000/000000
CEASE	61	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	000000/000000	000000/000000	000000/000000
RESUME	62	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	000000/000000	000000/000000	000000/000000
RVTC	63	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	000000/000000	000000/000000	000000/000000
GETMAIN	64	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	000142/000000	000000/000000	000002/000000
FREMAIN	65	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	000036/000000	000000/000000	000001/000000
REFTCH	66	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	000001/000000	000000/000000	000001/000000
GOE	67	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	000000/000000	000000/000000	000000/000000
LINK	68	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	000000/000000	000000/000000	000001/000000
DUPDAT	69	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	000000/000000	000000/000000	000000/000000

Figure 5-3. Phase 4 Output (1 of 2)

OPEN	6A	000000/000000	000000/000000	000000/000000	000000/000000	000000/000000	000000/000000	000000/000000	000000/000000
DCLOSE	6B	000000/000000	000000/000000	000000/000000	000000/000000	000000/000000	000010/000000	000000/000000	000000/000000
DREAD	6C	000000/000000	000000/000000	000000/000000	000000/000000	000000/000000	000035/000000	000000/000000	000000/000000
DWRITE	6D	000000/000000	000000/000000	000000/000000	000000/000000	000000/000000	001000/000000	000000/000000	000000/000000
PLOT	6E	000000/000000	000000/000000	000000/000000	000000/000000	000000/000000	000146/000000	000000/000000	000000/000000
PULS	6F	000000/000000	000000/000000	000000/000000	000000/000000	000000/000000	000146/000000	000000/000000	000000/000000
TAS	70	000000/000000	000000/000000	000000/000000	000000/000000	000000/000000	000000/000000	000000/000000	000000/000000
PROGRAM TOTALS		000000/000000	000000/000000	000000/000000	000000/000000	000000/000000	000517/000000	000000/000000	000529/000252

Figure 5-3. Phase 4 Output (2 of 2)

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PURGE PROCESSING HISTORY

TIME	PURGE CLASS INVOKED	PURGE CLASS BREAKDOWN 1	2	3	4	5	6	7	8	NO.2K BLKS PURGED	NO.MODULES PURGED	NO.2K BLKS REQUESTED
235118.7331	1	008	017	029	043	058	000	000	000	013	002	005
235119.0166	1	008	016	028	042	056	000	000	000	019	003	011
235119.4999	2	008	016	028	042	056	000	000	000	018	004	010
235120.4997	1	012	025	042	063	085	000	000	000	044	008	015
235121.4997	1	009	018	031	046	062	000	000	000	021	002	008
235122.0832	1	010	021	035	052	070	000	000	000	026	005	006
235123.0666	3	012	025	042	063	084	000	000	000	040	010	015
235123.7164	1	010	021	036	054	073	000	000	000	069	012	011
235125.5439	1	011	023	039	058	078	000	000	000	061	012	015
235130.4928	1	012	025	042	063	084	000	000	000	036	007	007
235131.7997	3	011	023	039	059	079	000	000	000	051	011	015
235132.6665	1	007	015	026	039	053	000	000	000	032	004	006
235134.4162	1	012	025	042	063	084	000	000	000	053	011	015
235135.0499	1	009	018	031	046	062	000	000	000	025	003	011
235135.7662	1	011	022	038	057	076	000	000	000	039	009	010
235136.7497	3	012	024	041	061	082	000	000	000	054	013	015
235137.3663	1	012	024	041	061	082	000	000	000	048	007	010
235143.5498	1	014	028	048	072	096	000	000	000	020	002	003
235151.3996	1	014	028	048	072	096	000	000	000	034	008	005
235211.0333	1	012	024	040	060	081	000	000	000	035	012	006
235214.6747	1	012	024	041	061	082	000	000	000	020	003	012
235223.9329	1	015	030	050	075	100	000	000	000	019	004	001
235224.7664	1	013	027	046	069	093	000	000	000	015	006	004
235234.6165	2	014	029	049	073	098	000	000	000	038	011	013
235250.7997	1	013	026	043	065	087	000	000	000	024	004	005
235301.3553	1	013	027	046	069	092	000	000	000	029	010	010
235302.3499	1	013	026	043	065	087	000	000	000	029	009	005
235304.3829	1	013	026	043	065	087	000	000	000	028	008	004
235312.1998	1	013	027	045	068	091	000	000	000	020	002	005
235313.0000	1	013	026	044	066	089	000	000	000	022	005	008
235318.2497	1	012	024	041	062	083	000	000	000	017	003	016
235322.1332	1	012	024	041	061	082	000	000	000	021	003	013
235323.2497	1	013	027	046	069	092	000	000	000	015	004	008
235330.0832	1	013	027	046	069	092	000	000	000	086	021	013
235336.0499	1	013	027	045	068	091	000	000	000	069	017	008
235423.7662	1	013	026	043	065	087	000	000	000	045	012	001
235424.7997	1	008	017	029	044	059	000	000	000	010	001	011
235425.3163	1	012	025	042	063	085	000	000	000	050	010	006
235434.0499	1	011	023	039	058	078	000	000	000	017	003	016
235435.3666	1	012	025	042	063	084	000	000	000	014	002	011
235437.0666	1	012	025	043	064	086	000	000	000	074	014	012
235440.7331	1	012	025	042	063	085	000	000	000	051	012	010
235444.0666	1	010	021	035	053	071	000	000	000	050	011	016
235444.6498	1	008	016	028	042	056	000	000	000	022	002	007
235446.2830	4	011	022	037	056	075	000	000	000	053	013	015
235504.3663	1	013	027	045	068	091	000	000	000	055	014	005
235512.9163	1	013	026	044	066	089	000	000	000	021	008	004

Figure 5-4. Phase 8 Output (1 of 3)

T I M I N G A N A L Y S I S R E P O R T P R O G R A M PAGE NO. 0037

SYSTEM TAPE IU-A3JR317Y COMPUUL-K3DA2174 TAPE START TIME-23 HOURS,51MINUTES,19 SECONDS REEL NO. 02 DATE 06/16/72

P U R G E P R O C E S S I N G H I S T O R Y

TIME	PURGE CLASS INVOKED	PURGE CLASS BREAKDOWN 1	2	3	4	5	6	7	8	NO.2K BLKS PURGED	NO.MODULES PURGED	NO.2K BLKS REQUESTED
235513.0498	4	013	026	044	066	088	000	000	000	059	016	015
235449.1998	1	020	041	069	104	139	000	000	000	133	027	001
2357 6.3330	1	021	042	071	106	142	000	000	000	091	020	006
235726.3829	1	017	034	057	085	114	000	000	000	035	011	010
235730.0000	1	019	038	063	095	127	000	000	000	040	010	005
235733.5499	1	015	030	051	076	102	000	000	000	015	002	013
235731.4662	1	017	035	059	089	119	000	000	000	030	003	005
235737.7497	2	017	035	059	089	119	000	000	000	033	009	016
235743.5479	1	019	039	066	099	133	000	000	000	047	010	010
235745.1332	1	018	037	062	093	125	000	000	000	022	005	004
235747.7497	1	018	036	060	090	120	000	000	000	068	011	016
235802.0831	1	018	037	062	093	124	000	000	000	069	010	013
235813.8663	3	020	041	068	102	137	000	000	000	082	014	016
235831.1831	1	020	041	069	104	139	000	000	000	045	011	013
235832.7664	1	018	037	062	093	125	000	000	000	052	008	004
235846.2331	2	018	036	061	091	122	000	000	000	035	010	016
235843.8163	2	019	039	066	099	133	000	000	000	031	006	013
235844.2666	1	018	036	061	092	123	000	000	000	106	024	010
235900.8796	1	018	037	063	094	126	000	000	000	077	017	006
235903.8496	1	020	040	068	102	136	000	000	000	071	013	016
235907.8663	1	021	043	072	108	144	000	000	000	076	013	006
235923.1498	1	021	042	070	105	141	000	000	000	062	012	013
235934.8829	1	021	042	070	105	140	000	000	000	061	010	005
235952.8829	1	019	039	065	097	130	000	000	000	055	011	004
235955.1998	1	020	040	067	100	134	000	000	000	044	008	007
235956.7830	1	019	038	063	095	127	000	000	000	034	005	013

Figure 5-4. Phase 8 Output (2 of 3)

```
                    P U R G E   H I S T O R Y   S T A T I S T I C S          PAGE NO. 0031

PURGE INVOKED TOTAL = 0073          AVERAGE PURGE SIZE = 0042
TOTAL NO.2K PURGES  = 003129        AVERAGE TIME INTERVAL BETWEEN PURGES = 0000J7.1951
MINIMUM 2K BLOCKS   = 0010          MAXIMUM 2K BLOCKS  = 0133

  PURGE CLASS INVOKED      NO. TIMES REACHED      % OF TOTAL REACHED
          1                      062                    084
          2                      005                    006
          3                      004                    005
          4                      002                    002
          5                      000                    000
          6                      000                    000
          7                      000                    000
          8                      000                    000

JOB TERMINATED
ELAPSED TIME 00/05/32
END
END OF BATCH
ELAPSED TIME 00/00/00
```

Figure 5-4. Phase 8 Output (3 of 3)

```
PH9TIME 000000 000000

SAR TAPE IDENTIFICATION:  TIME = 22:45:06  DATE = 02/17/76  SITE =

SAR LABEL = BLS500Y          R76.021 EOM088Y  Z3CA5345 L3D104 02/07/76


TAPE COUNT ENCOUNTERED AT 22.45.39.
TAPE COUNT ENCOUNTERED AT 22.47.02.
TAPE COUNT ENCOUNTERED AT 22.47.03.
TAPE COUNT ENCOUNTERED AT 22.47.04
TAPE COUNT ENCOUNTERED AT 22.47.04.
TAPE COUNT ENCOUNTERED AT 22.47.06.
TAPE COUNT ENCOUNTERED AT 22.47.06.
TAPE COUNT ENCOUNTERED AT 22.47.08.
TAPE COUNT ENCOUNTERED AT 22.47.08.
TAPE COUNT ENCOUNTERED AT 22.47.09.
TAPE COUNT ENCOUNTERED AT 22.47.09.
TAPE COUNT ENCOUNTERED AT 22.47.10.
TAPE COUNT ENCOUNTERED AT 22.47.10.
TAPE COUNT ENCOUNTERED AT 22.47.11.
TAPE COUNT ENCOUNTERED AT 22.47.11.
TAPE COUNT ENCOUNTERED AT 22.47.12.
TAPE COUNT ENCOUNTERED AT 22.47.12.
TAPE COUNT ENCOUNTERED AT 22.47.12.
TAPE COUNT ENCOUNTERED AT 22.47.13.
TAPE COUNT ENCOUNTERED AT 22.47.14.
TAPE COUNT ENCOUNTERED AT 22.47.15.
TAPE COUNT ENCOUNTERED AT 22.47.18.
TAPE COUNT ENCOUNTERED AT 22.47.18.
TAPE COUNT ENCOUNTERED AT 22.47.19.
TAPE COUNT ENCOUNTERED AT 22.47.20.
TAPE COUNT ENCOUNTERED AT 22.47.20.
TAPE COUNT ENCOUNTERED AT 22.47.22.
TAPE COUNT ENCOUNTERED AT 22.47.23.
TAPE COUNT ENCOUNTERED AT 22.47.23.
TAPE COUNT ENCOUNTERED AT 22.47.24.
TAPE COUNT ENCOUNTERED AT 22.47.24.
TAPE COUNT ENCOUNTERED AT 22.47.26.
TAPE COUNT ENCOUNTERED AT 22.47.27.
TAPE COUNT ENCOUNTERED AT 22.57.38.
TAPE COUNT ENCOUNTERED AT 23.01.38.
HRT TAPE WRITTEN FROM TIME 22.45.05 TO TIME 23.16.48.

JOB TERMINATED
ELAPSED TIME 00/15/52: PRINT TIME 00/07/26: 6824 LINES, 0 CARDS OUTPUT
```

Figure 5-5. Phase 9 Output

SECTION 6 - DIAGNOSTICS

6.1 Tape and Environment Diagnostics

The following messages indicate an error in available hardware, in tape mounting, or in the tapes themselves.

- BAD HEADER ON SAR TAPE

  A tape read error occurred while reading SAR header. The job is terminated.

- ONE RECORD SKIPPED ON SAR TAPE

  A tape read error occurred while reading the SAR tape. One physical record was skipped and processing continues.

- PGM NAME NOT ON COMPOOL

  The subprogram requested is either spelled wrong or is not on the Compool being used for this run. The request is not processed.

- ONE LINE MISSING HERE

  A tape read error has occurred while reading the work tape during printing of the Phase 2 listing. Processing continues.

6.2 Card Diagnostics

The following diagnostics are printed with the card in error.

- PHASE CTL CD MISSING, THIS ONE GENERATED

  The Phase control card was not found in the input stream and one was generated using default values.

- NO PHASE, 7 ASSUMED or BAD PHASE, 7 ASSUMED

  One of these two messages is printed if the phase number is either missing or is not valid on the phase control card. Valid phase numbers are 1 through 7. Phase number 7 is assumed.

- NO COMP IND, N ASSUMED
  BAD COMP IND, N ASSUMED or

  One of these two messages is printed if the Compool indicator is either missing or invalid on the phase control card. Valid values are N for no Compool on the tape and Y for Compool present on the file. It is assumed that there is no Compool on the tape.

- NO TIME FREQ, 0300 ASSUMED
  BAD TIME FREQ, 0300 ASSUMED or

  One of these two messages is printed if the internal timer frequency is either missing or not numeric on the phase control card. For either case, an internal timer frequency of 0300 is assumed.

- PGM NAME

  The program name on this Phase 1 request card is either too short or too long. The request is rejected.

- START

  The start time on this Phase 1 request card is invalid. It is either non-numeric or greater than 235959. The request is rejected.

- STOP

  The stop time on this Phase 1 request card is invalid. It is either non-numeric or greater than 235959. The request is rejected.

- SUMMARY

  The summary parameter on this Phase 1 request card is invalid (non-numeric). The request is rejected.

- PERIOD

  The subprogram frequency parameter on this Phase 1 request card is invalid (non-numeric). The request is rejected.

- BAD PHASE CONTROL WORD

  The Phase 2 or 4 request card does not have TIME in columns 4-7. The request card is rejected.

- BAD START TIME

  This Phase 2 or 4 request card has an invalid start time. It is either non-numeric or greater than 235959. The request is rejected.

- BAD STOP TIME

  This Phase 2 or 4 request card has an invalid stop time. It is either non-numeric or greater than 235959. The request is rejected.

- LIB UNIT NOT AVAILABLE - CANNOT CONTINUE

  The LIB unit is not available and no alternate unit is used. Job is terminated.

- NO UNIT AVAILABLE FOR SAR - CANNOT CONTINUE

  There are not enough units available to allow mounting the SAR tape. Job is terminated.

- BAD HEADER ON SAR TAPE

  Tape read error occurred while reading SAR header. Job is terminated.

- NO VALID REQUEST CARDS FOUND PLACE CARDS IN READER AND HIT ENTER IF MORE INPUT, OR TYPE END TO TERMINATE

  No valid request cards have been read. Either all of the request cards had errors, or there were no request cards in the run deck.

If run is made on-line and all request cards are invalid, type END to terminate job, fix cards and rerun job. If request cards are not in run deck and valid model and place control cards were present, place request cards in reader and hit ENTER key to continue; otherwise type END, put run deck together and rerun job. If run is made off-line, type END to terminate job, put run deck together correctly, and rerun job.

- ONE RECORD SKIPPED ON SAR TAPE

  A tape read error has occurred while reading the SAR tape. The bad record is skipped, and processing continues with the next physical record.

- EOF REACHED ON THIS REEL
  HIT ENTER IF MORE INPUT, OR TYPE END TO STOP RUN

  End of file reached on the SAR tape. If all requests have been satisfied, the second line of this message is not typed, normal end of job processing is done, and the run is finished. If all requests have not been satisfied, the second message is typed. If there is another SAR tape to be used, the operator should mount the next SAR tape and hit ENTER for processing to continue. If the next SAR tape is not available, or not to be used for this run, type END to finish job.

- THE DATE ON THIS REEL DOESN'T MATCH DATE ON PREVIOUS REEL

  When more than one reel of input is used in a run, every tape must have the same date as on the first tape. If the dates are not the same, the tape is probably labeled wrong or is not from the CFC run which generated the first tape.

SECTION 7 - JOB CONTROL LANGUAGE

TARP requires six DD statements for normal operation. Figures 7-1 and 7-2 shows sample JCL for the phases of TARP.

7.1 SYSIN

The SYSIN DD statement defines the control card input file. The file must be blocked and be 80-character card images.

7.2 SYSTWR

The SYSTWR DD statement defines the output file for messages intended for the system console. Messages originally intended for the operator are written to this data set so the user may see any error messages that were not output to a print data set. This data set may be blocked and must have a logical record length of 132.

7.3 SYSPRS

The SYSPRS DD statement defines the output print file. All report output and control card listings are written to this file. This data set may be blocked and must have a logical record length of 133.

7.4 SCRATCH

The SCRATCH DD statement defines a temporary data set used by TARP. No DCB information should be included on the DD statement.

7.5 SARDD

The SARDD DD statement defines the SAR tape input file. Any number of SAR tapes may be input as long as they are in the order that they were produced.

7.6 HRTDD

The HRTDD statement defines the output tape file for Phase 9 processing.

This should be a standard label tape with an undefined record format.

For phases other than Phase 9, a dummy DD statement may be supplied.

```
    //TARP  EXEC  PGM=TARP,REGION=250K
    //STEPLIB DD DSN=RA.LIB.LOBJ.NOSS,DISP=SHR
(1) //HRTDD DD DUMMY
(2) //SCRATCH DD DSN=RA.TARP.XXXX,UNIT=SYSDA,DISP=(,PASS),
    //      SPACE=(TRK,(500,5)),VOL=SER=WORK01
(3) //SYSIN DD *

      control card input

(4) //SARDD DD DCB=(DEN=2,RECFM=U,LRECL=10000,BLKSIZE=10000),
    //      UNIT=(TAPE,,DEFER),DSN=XCF1514,VOL=SER=CF1514,
    //       LABEL=(,NL,,IN),DISP=(OLD,KEEP)
(5) //SYSPRS DD SYSOUT=A,DCB=(BLKSIZE=133,RECFM=FBA,LRECL=133)
(6) //SYSTWR DD SYSOUT=A,DCB=(BLKSIZE=133,LRECL=133,RECFM=FBA)
```

Figure 7-1. Sample JCL for Phases 1-8

NOTES:

(1) The HRT DD statement is dummy because no HRT tape is to be created.

(2) The SCRATCH data set is a temporary data set used mostly for phase 2 processing.

(3) Control cards follow the SYSIN DD statement.

(4) The SARDD DD statement defines the SAR tape input file.

(5) The SYSPRS defines the print data set.

(6) The SYSTWR defines the output data set for messages intended for the system console.

```
      //TARP  EXEC  PGM=TARP,REGION=250K
      //STEPLIB DD DSN=RA.LIB.LOBJ.NOSS,DISP=SHR
(1)   //HRTDD DD DCB=(DEN=2,RECFM=U,LRECL=10000,BLKSIZE=10000),
      //      UNIT=(TAPE,,DEFER),DSN=XXXXXX,
      //       LABEL=(,SL,,OUT),DISP=(NEW,PASS)
      //SCRATCH DD DSN=RA.SCRATCH,UNIT=SYSDA,DISP=(,PASS),
      //      SPACE=(TRK,(100,5))
      //SYSIN DD *

        control card input

      //SARDD DD DCB=(DEN=2,RECFM=U,LRECL=10000,BLKSIZE=10000),
      //      UNIT=(TAPE,,DEFER),DSN=XCF1601,VOL=SER=CF1601,
      //       LABEL=(,NL,,IN),DISP=(OLD,KEEP)
      //SYSPRS DD SYSOUT=A,DCB=(BLKSIZE=133,RECFM=FBA,LRECL=133)
      //SYSTWR DD SYSOUT=A,DCB=(BLKSIZE=133,LRECL=133,RECFM=FBA)
```

Figure 7-2. Sample JCL for Phase 9

NOTES:

(1) The HRTDD DD statement defines a standard label output tape to receive the HRT data.

The remaining DD statements are same as in Figure 7-1.